SAF-RC-189
100N Field Remediation –
Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0807 SAF-RC-189

Sample Location: 100-N-84:2

Date: 20 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Subsite 100-N-84:2
Subject: Inorganics - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPW4	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	C	See note 1
J1TPX6	5/21/14	Soil	C	See note 1
J1TPX7	5/21/14	Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	C	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	C	See note 1

1 - ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1TPW4) was submitted for analysis. Twelve analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all arsenic (50%), barium (37%), beryllium (48%), boron (50%), cadmium (58%), chromium (30%), cobalt (41%), lead (46%), molybdenum (51%), nickel (37%), potassium (41%), selenium (52%), silver (59%) and sodium (51%) results were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits, all undetected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as rejected and flagged "UR".

Due to matrix spike recoveries outside QC limits, all detected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (13%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to RPDs outside QC limits, all aluminum (50%), barium (54%), calcium (49%), chromium (46%), copper (46%), iron (49%), magnesium (47%), manganese (50%), silicon (54%), sodium (50%), vanadium (51%) and zinc (46%) results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for barium (39.5%) and sodium (37.8%) was outside QC limits. Under WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 96%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all arsenic (50%), barium (37%), beryllium (48%), boron (50%), cadmium (58%), chromium (30%), cobalt (41%), lead (46%), molybdenum (51%), nickel (37%), potassium (41%), selenium (52%), silver (59%) and sodium (51%) results were qualified as estimates and flagged "J".

- Due to matrix spike recoveries outside QC limits, all undetected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as rejected and flagged "UR".

- Due to matrix spike recoveries outside QC limits, all detected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits, all silicon (13%) results were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all aluminum (50%), barium (54%), calcium (49%), chromium (46%), copper (46%), iron (49%), magnesium (47%), manganese (50%), silicon (54%), sodium (50%), vanadium (51%) and zinc (46%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: JP0807	**REVIEWER: ELR**	**Project: 100-N-84:2**	**PAGE 1 OF 1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Arsenic barium beryllium boron cadmium chromium cobalt lead molybdenum nickel potassium selenium silver sodium	J	All	MS recovery
Antimony	J	J1TPV1	MS recovery
Antimony	UR	J1TPV2, J1TPW4 J1TPX5, J1TPX6 J1TPX7, J1TPX8 J1TPX9, J1TR01 J1TR02, J1TR04 J1TR07	MS recovery
Calcium Copper Magnesium Silicon Vanadium Zinc	J	All	MS recovery
Aluminum barium calcium chromium copper iron magnesium manganese silicon sodium vanadium zinc	J	All	RPD

METALS DATA QUALIFICATION SUMMARY*

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPV1

Lab Sample ID: 280-55789-1
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 0749
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1309
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7980	X M J	1.5	4.9
Antimony		0.40	B J	0.37	0.58
Arsenic		3.3	N J	0.64	0.97
Barium		62.0	N X M J	0.074	0.49
Beryllium		0.032	U N J	0.032	0.19
Boron		0.96	B N J	0.95	1.9
Cadmium		0.13	B N M J	0.040	0.19
Calcium		7990	N X M J	13.7	48.5
Chromium		11.6	N X M J	0.056	0.19
Cobalt		10.4	N X M J	0.097	0.97
Copper		16.1	N X M J	0.21	0.97
Iron		24800	X M J	3.7	4.9
Lead		5.5	N M J	0.26	0.49
Magnesium		6140	N X M J	3.6	19.4
Manganese		379	X M J	0.097	0.97
Molybdenum		0.25	U N J	0.25	1.9
Nickel		14.9	N X M J	0.12	3.9
Potassium		1290	N M J	39.8	291
Selenium		0.83	U N J	0.83	0.97
Silicon		274	N M J	5.5	9.7
Silver		0.16	U N J	0.16	0.19
Sodium		280	N M J	57.2	116
Vanadium		61.9	N M J	0.091	1.9
Zinc		47.5	N X M J	0.39	0.97

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1820
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.67 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0087	B	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPV2

Lab Sample ID: 280-55789-2
Client Matrix: Solid

% Moisture: 1.2

Date Sampled: 05/21/2014 0744
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1319
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.08 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7470	X J	1.5	4.7
Antimony		0.36	U R	0.36	0.56
Arsenic		3.1	J	0.62	0.94
Barium		64.2	X	0.071	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.6	B	0.92	1.9
Cadmium		0.18	B N	0.038	0.19
Calcium		5790	X	13.2	46.9
Chromium		15.8	X	0.054	0.19
Cobalt		8.4	X	0.094	0.94
Copper		16.0	X	0.20	0.94
Iron		20800	X	3.6	4.7
Lead		8.1		0.25	0.47
Magnesium		4310	X	3.5	18.7
Manganese		322	X	0.094	0.94
Molybdenum		0.28	B	0.24	1.9
Nickel		12.6	X	0.12	3.7
Potassium		1460		38.4	281
Selenium		0.81	U	0.81	0.94
Silicon		224		5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		292		55.3	112
Vanadium		45.5		0.088	1.9
Zinc		46.5	X	0.37	0.94

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1827
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.58 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0094	B	0.0058	0.018

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPW4

Lab Sample ID: 280-55789-3
Client Matrix: Solid

% Moisture: 0.1

Date Sampled: 05/21/2014 0713
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1322
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

V 6/20/14

Instrument ID: MT_026
Lab File ID: 28A052814A.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		98.4	X J	1.4	4.5
Antimony		0.35	U JR	0.35	0.55
Arsenic		0.60	U J	0.60	0.91
Barium		1.2	X	0.069	0.45
Beryllium		0.030	U	0.030	0.18
Boron		0.89	U	0.89	1.8
Cadmium		0.037	U N	0.037	0.18
Calcium		21.7	B X	12.8	45.5
Chromium		0.14	B X	0.053	0.18
Cobalt		0.091	U X	0.091	0.91
Copper		0.59	B X	0.20	0.91
Iron		159	X	3.5	4.5
Lead		0.40	B	0.25	0.45
Magnesium		11.8	B X	3.4	18.2
Manganese		2.9	X	0.091	0.91
Molybdenum		0.24	U	0.24	1.8
Nickel		0.11	U X	0.11	3.6
Potassium		37.3	U	37.3	273
Selenium		0.78	U	0.78	0.91
Silicon		87.6		5.1	9.1
Silver		0.15	U	0.15	0.18
Sodium		53.7	U	53.7	109
Vanadium		0.26	B	0.086	1.8
Zinc		0.62	B X	0.36	0.91

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1829
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.64 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0052	U	0.0052	0.016

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX5

Lab Sample ID: 280-55789-4
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 1051
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1325
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

6/4/2014

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.04 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3430	X J	1.5	4.9
Antimony		0.38	U J	0.38	0.59
Arsenic		1.8		0.65	0.99
Barium		26.6	X	0.075	0.49
Beryllium		0.033	U	0.033	0.20
Boron		0.97	U	0.97	2.0
Cadmium		0.050	B N	0.041	0.20
Calcium		4200	X	14.0	49.5
Chromium		4.0	X	0.057	0.20
Cobalt		4.7	X	0.099	0.99
Copper		8.2	X	0.21	0.99
Iron		10800	X	3.8	4.9
Lead		3.0		0.27	0.49
Magnesium		2410	X	3.7	19.8
Manganese		160	X	0.099	0.99
Molybdenum		0.26	U	0.26	2.0
Nickel		6.0	X	0.12	4.0
Potassium		576		40.6	297
Selenium		0.85	U	0.85	0.99
Silicon		112		5.6	9.9
Silver		0.16	U	0.16	0.20
Sodium		218		58.4	119
Vanadium		24.4		0.093	2.0
Zinc		21.9	X	0.39	0.99

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1836
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.60 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0093	B	0.0057	0.017

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX6

Lab Sample ID: 280-55789-5
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1327
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

V 6/2014

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4600	X J	1.6	5.1
Antimony		0.38	U J R	0.38	0.61
Arsenic		1.8	J	0.67	1.0
Barium		56.6	X	0.077	0.51
Beryllium		0.033	U	0.033	0.20
Boron		0.99	U	0.99	2.0
Cadmium		0.052	B N	0.041	0.20
Calcium		5400	X	14.3	50.6
Chromium		3.3	X	0.059	0.20
Cobalt		10.3	X	0.10	1.0
Copper		14.4	X	0.22	1.0
Iron		25000	X	3.8	5.1
Lead		3.7		0.27	0.51
Magnesium		4270	X	3.7	20.2
Manganese		299	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		6.6	X	0.12	4.0
Potassium		626		41.5	303
Selenium		0.87	U	0.87	1.0
Silicon		149		5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		349		59.7	121
Vanadium		63.8		0.095	2.0
Zinc		42.6	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1838
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.54 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0062	U	0.0062	0.019

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX7

Lab Sample ID: 280-55789-6
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 05/21/2014 1115
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1340
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.15 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6090	X	1.4	4.4
Antimony		0.34	U	0.34	0.53
Arsenic		2.7		0.58	0.88
Barium		49.7	X	0.067	0.44
Beryllium		0.029	U	0.029	0.18
Boron		0.87	U	0.87	1.8
Cadmium		0.11	B N	0.036	0.18
Calcium		5950	X	12.5	44.2
Chromium		7.1	X	0.051	0.18
Cobalt		9.3	X	0.088	0.88
Copper		14.4	X	0.19	0.88
Iron		22400	X	3.4	4.4
Lead		4.6		0.24	0.44
Magnesium		4570	X	3.3	17.7
Manganese		307	X	0.088	0.88
Molybdenum		0.23	U	0.23	1.8
Nickel		9.9	X	0.11	3.5
Potassium		955		36.2	265
Selenium		0.76	U	0.76	0.88
Silicon		171		5.0	8.8
Silver		0.14	U	0.14	0.18
Sodium		300		52.1	106
Vanadium		53.7		0.083	1.8
Zinc		47.6	X	0.35	0.88

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1841
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.64 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.019		0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX8

Lab Sample ID: 280-55789-7
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/21/2014 1120
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1342
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.06 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4850	X J	1.5	4.8
Antimony		0.38	U R	0.38	0.57
Arsenic		2.1	J	0.63	0.96
Barium		87.5	X	0.073	0.48
Beryllium		0.032	U	0.032	0.19
Boron		0.94	U	0.94	1.9
Cadmium		0.047	B N	0.039	0.19
Calcium		5880	X	13.5	47.9
Chromium		4.7	X	0.056	0.19
Cobalt		10.6	X	0.096	0.96
Copper		14.7	X	0.21	0.96
Iron		26500	X	3.6	4.8
Lead		3.8		0.26	0.48
Magnesium		4690	X	3.5	19.2
Manganese		429	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Nickel		7.6	X	0.12	3.8
Potassium		715		39.3	287
Selenium		0.82	U	0.82	0.96
Silicon		219		5.4	9.6
Silver		0.15	U	0.15	0.19
Sodium		361		56.5	115
Vanadium		64.5		0.090	1.9
Zinc		44.0	X	0.38	0.96

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1843
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.56 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0063	B	0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX9

Lab Sample ID: 280-55789-8
Client Matrix: Solid

% Moisture: 3.4

Date Sampled: 05/21/2014 0848
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-227791	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	05/28/2014 1345			Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				

V 6/20/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8630	X	1.5	4.7
Antimony		0.36	U	0.36	0.57
Arsenic		3.5		0.63	0.95
Barium		66.6	X	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.2	B	0.93	1.9
Cadmium		0.13	B N	0.039	0.19
Calcium		9300	X	13.4	47.5
Chromium		10.7	X	0.055	0.19
Cobalt		9.3	X	0.095	0.95
Copper		18.1	X	0.21	0.95
Iron		22400	X	3.6	4.7
Lead		6.1		0.26	0.47
Magnesium		5250	X	3.5	19.0
Manganese		342	X	0.095	0.95
Molybdenum		0.25	U	0.25	1.9
Nickel		12.4	X	0.12	3.8
Potassium		1520		38.9	285
Selenium		0.82	U	0.82	0.95
Silicon		277		5.4	9.5
Silver		0.15	U	0.15	0.19
Sodium		408		56.0	114
Vanadium		50.2		0.089	1.9
Zinc		61.3	X	0.38	0.95

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-227591	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	0.58 g
Analysis Date:	05/27/2014 1845			Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.011	B	0.0059	0.018

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR01

Lab Sample ID: 280-55789-9
Client Matrix: Solid % Moisture: 1.7

Date Sampled: 05/21/2014 0818
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-227791	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0			Initial Weight/Volume:	1.06 g
Analysis Date:	05/28/2014 1348			Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				

V 6/20/14

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4650	X J	1.5	4.8
Arsenic		1.9		0.63	0.96
Barium		41.7	X	0.073	0.48
Boron		0.94	U	0.94	1.9
Cadmium		0.067	B N	0.039	0.19
Calcium		6630	X	13.5	48.0
Chromium		4.0	X	0.056	0.19
Iron		28000	X	3.6	4.8
Magnesium		4840	X	3.6	19.2
Manganese		318	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Nickel		8.5	X	0.12	3.8
Potassium		614		39.3	288
Selenium		0.83	U	0.83	0.96
Silver		0.15	U	0.15	0.19
Sodium		314		56.6	115
Zinc		48.6	X	0.38	0.96

Analysis Method:	6010B	Analysis Batch:	280-228120	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-227290	Lab File ID:	26a053014a.asc
Dilution:	5.0			Initial Weight/Volume:	1.06 g
Analysis Date:	05/30/2014 1803			Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.8	U R	1.8	2.9
Beryllium		0.16	U J	0.16	0.96
Cobalt		11.2	X	0.48	4.8
Copper		18.0	X	1.0	4.8
Lead		5.4		1.3	2.4
Silicon		185		27.2	48.0
Vanadium		81.2		0.45	9.6

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-227591	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	0.66 g
Analysis Date:	05/27/2014 1848			Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0061	B	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR02

Lab Sample ID: 280-55789-10
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/21/2014 0857
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1350
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4110	X	1.6	5.1
Antimony		0.39	U	0.39	0.61
Arsenic		2.0		0.67	1.0
Barium		35.2	X	0.077	0.51
Beryllium		0.033	U	0.033	0.20
Boron		0.99	U	0.99	2.0
Cadmium		0.042	U N	0.042	0.20
Calcium		4850	X	14.3	50.7
Chromium		4.9	X	0.059	0.20
Cobalt		6.9	X	0.10	1.0
Copper		10.4	X	0.22	1.0
Iron		16500	X	3.9	5.1
Lead		3.4		0.27	0.51
Magnesium		3320	X	3.8	20.3
Manganese		222	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		7.0	X	0.12	4.1
Potassium		687		41.6	304
Selenium		0.87	U	0.87	1.0
Silicon		150		5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		201		59.9	122
Vanadium		40.7		0.095	2.0
Zinc		31.7	X	0.40	1.0

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1850
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.68 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0078	B	0.0050	0.015

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR04**

Lab Sample ID: 280-55789-11
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 05/21/2014 0803
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1353
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

6/20/14

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.12 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9050	X J	1.4	4.5
Antimony		0.34	U R	0.34	0.54
Arsenic		3.2	J	0.60	0.91
Barium		75.1	X	0.069	0.45
Beryllium		0.046	B	0.030	0.18
Boron		1.5	B	0.89	1.8
Cadmium		0.099	B N	0.037	0.18
Calcium		4790	X	12.8	45.4
Chromium		12.1	X	0.053	0.18
Cobalt		8.9	X	0.091	0.91
Copper		16.0	X	0.20	0.91
Iron		22100	X	3.4	4.5
Lead		5.6		0.25	0.45
Magnesium		4890	X	3.4	18.2
Manganese		351	X	0.091	0.91
Molybdenum		0.24	U	0.24	1.8
Nickel		12.4	X	0.11	3.6
Potassium		1920		37.2	272
Selenium		0.78	U	0.78	0.91
Silicon		295		5.1	9.1
Silver		0.15	U	0.15	0.18
Sodium		276		53.5	109
Vanadium		45.7		0.085	1.8
Zinc		44.1	X	0.36	0.91

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1852
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.58 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.011	B	0.0058	0.018

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR07

Lab Sample ID: 280-55789-12
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 05/28/2014 1355
Prep Date: 05/27/2014 1230

Analysis Batch: 280-227791
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26A052814A.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3850	X J	1.4	4.6
Arsenic		2.1		0.61	0.93
Barium		37.9	X	0.071	0.46
Boron		0.91	U	0.91	1.9
Cadmium		0.092	B N	0.038	0.19
Calcium		6400	X	13.1	46.5
Chromium		3.8	X	0.054	0.19
Iron		26700	X	3.5	4.6
Magnesium		4450	X	3.4	18.6
Manganese		319	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		6.9	X	0.11	3.7
Potassium		611		38.1	279
Selenium		0.80	U	0.80	0.93
Silver		0.15	U	0.15	0.19
Sodium		238		54.8	112
Zinc		45.6	X	0.37	0.93

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 5.0
Analysis Date: 05/30/2014 1806
Prep Date: 05/27/2014 1230

Analysis Batch: 280-228120
Prep Batch: 280-227290

Instrument ID: MT_026
Lab File ID: 26a053014a.asc
Initial Weight/Volume: 1.09 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		1.8	U R	1.8	2.8
Beryllium		0.15	U J	0.15	0.93
Cobalt		10.7	X	0.46	4.6
Copper		16.1	X	1.0	4.6
Lead		4.2		1.3	2.3
Silicon		167		26.3	46.5
Vanadium		73.6		0.44	9.3

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 05/27/2014 1855
Prep Date: 05/27/2014 1300

Analysis Batch: 280-227591
Prep Batch: 280-227408

Instrument ID: MT_033
Lab File ID: N/A
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0055	U	0.0055	0.017

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807
SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

Page 1 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code: 7 DAY — Data Turnaround

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See item (1) in Special Instructions
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
				Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D+
				Cool 4C	Ga*	3	60 mL DWS 5/21/14	TPH-Gasoline Range - WTPH-G
J1TPV1	SOIL	5-21-14	0749	X	X	X	X	X
J1TPV2	SOIL	5-21-14	0744	X	X	X	X	X
J1TPV3	SOIL	DWS 5/21/14						
J1TPV4	SOIL							
J1TPV5 DWS 5/22/14	SOIL	5-21-14	0726	X	X	X	X	X 05/21-14

Page 1 of 1

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	Joshua DWSH&A	5/21/14 1442
Joshua DWSH&A	5/21/14 1703	Fridge 3A Bay 16	5/21/14 1703
Fridge 3A Bay 16	5/22/14 0816	Joshua DWSH&A	5/22/14 0816
Joshua DWSH&A	5/22/14 0820	Fed Ex	
			5/23/14 945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 8010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

Page ~~3 of 3~~ 2 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To:			Price Code: / Data Turnaround: 7 days

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
				Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	Ga*	3	60 ~~40~~ mL DWS 5/21/14	TPH-Gasoline Range - WTPH-G
~~J1TPW1~~	~~SOIL~~	DWS 5/21/14						
~~J1TPW2~~	~~SOIL~~							
~~J1TPW3~~	~~SOIL~~							
J1TPW4	SOIL	5-21-14	0713	X				

~~DWS 5/21/14~~ DWS 5/21/14
DWS 5/22/14

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWSheaDWSHEA	5/21/14 1442
DWSheaDWSHEA	5/21/14 1703	Fridge 3A Bottle 6	5/21/14 1703
DWSheaDWSHEA Fridge 3A 10803 Bottle 6	5/22/14 0816	DWSheaDWSHEA	5/22/14 0816
DWSheaDWSHEA	5/22/14 0820	Fed Ex	
			5/23-14 945

DWS 5/22/14

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

4,4,1,4,4
IR 70.3
5/23/14
50

JP0807

RECEIVED BY SMS DATE 5/22/14

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131 147		Bill of Lading/Air Bill No.: SeaOSPC

Price Code: | Data Turnaround: 7 days

Other Labs Shipped To:

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See item (1) in Special Instructions	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082	Sample Analysis: TPH-Diesel Range - WTPH-D +	Sample Analysis: TPH-Gasoline Range - WTPH-G
				Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
				G/P	aG	aG	G	Ga*				
				1	1	1	1	3				
				250mL	250mL	250mL	125mL	60mL				
J1TPX5	SOIL	5-21-14	1051	X	X	X	X	X				
J1TPX6	SOIL	5-21-14	1058	X	X	X	X	X				
J1TPX7	SOIL	5-21-14	1115	X	X	X	X	X				
J1TPX8	SOIL	5-21-14	1120	X	X	X	X	X				
J1TPX9	SOIL	5-21-14	0848	X	X	X	X	X				

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWSheaDWSHEA	5/21/14 1442
DWSheaDWSHEA	5/21/14 1703	Fridge 3A	5/21/14 1703
Fridge 3A	5/21/14 0816	DWSheaDWSHEA	5/22/14 0816
DWSheaDWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-189-304	Page 2 of 3
Collector: Q. Stone	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 7days
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189	
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To											
	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
	Type of Container	G/P	aG	aG	G	Ga*					
POSSIBLE SAMPLE HAZARDS/REMARKS: *Potentially radioactive*	No. of Container(s)	1	1	1	1	3					
	Volume	250mL	250mL	250mL	125mL	60mL					
Special Handling and/or Storage	Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					

Sample No.	Matrix	Sample Date	Sample Time									
~~J1TR00~~	~~SOIL~~	DWS 5/21/14										
J1TR01	SOIL	5/21/14	0818	x	x	x	x	x				
J1TR02	SOIL	5/21/14	0857	x	x	x	x	x				
~~J1TR03~~	~~SOIL~~		DWS 5/21/14									
J1TR04	SOIL	5-21-14	0803	x	x	x	x	x				

CHAIN OF POSSESSION (05-22-14)

Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time
Quincy Stone 5-21-14 1442	DWSHEA DWSHEA 5/21/14 1442
DWSHEA DWSHEA 5/21/14 1703	Fridge 3A 1060 Battelle 5/21/14 1703
Fridge 3A 1060 Battelle 5/22/14 0816	DWSHEA DWSHEA 5/22/14 0816
DWSHEA DWSHEA 5/22/14 0820	Fed EX
	5-23-14 945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

JP0807

REVIEWED BY SMS DATE 5/22/14

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 3 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code | Data Turnaround: 7 days

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions
~~01TR05~~	~~SOIL~~	5/21/14		Cool 4C	aG	1	250mL	PAHs - 8310
~~01TR06~~	~~SOIL~~	5/21/14		Cool 4C	aG	1	250mL	PCBs - 8082
01TR07	SOIL	5-21-14	1058	Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	G*	3	60mL	TPH-Gasoline Range - WTPH-G

CHAIN OF POSSESSION 5/21/14

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names
Quincy Stowe	5/21/14 1442	Dushea DuSHEA	5/21/14 1442	
Dushea DuSHEA	5/21/14 1703	Fridge 3A 1060 Bottelle	5/21/14 1703	
Fridge 3A 1060 Bottelle	5/22/14 0816	Dushea DuSHEA	5/22/14 0816	
Dushea DuSHEA	5/22/14 0820	Fed EX		
			5-23-14 945	

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

JP 0807

REVIEWED BY SMS DATE 5/22/14

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-84:2			DATA PACKAGE: JP0807		
VALIDATOR: ELR		LAB: TAL		DATE: 6/20/14	
			SDG: JP0807		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J1TPV1	J1TPV2	J1TPW4	J1TPY5	J1TPY6	
J1TPX7	J1TPX8	J1TPX9	J1TR01	J1TR02	
J1TR04	J1TR07				

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments:

FB - 12 detects

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: LCS - silicon (132) - J all

MS - J - 25
MS - J UR - 12 7

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	**No**	N/A
Duplicate results acceptable?	Yes	**No**	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	**N/A**
MS/MSD standards expired? (Levels D, E)	Yes	No	**N/A**
Field duplicate RPD values acceptable?	Yes	**No**	N/A
Field split RPD values acceptable?	Yes	No	**N/A**
Transcription/calculation errors? (Levels D, E)	Yes	No	**N/A**

Comments: RPD - ~~IIIIIII~~

FD - 2 out

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	**N/A**
ICP serial dilution %D values acceptable?	Yes	No	**N/A**
ICP post digestion spike required?	Yes	No	**N/A**
ICP post digestion spike values acceptable?	Yes	No	**N/A**
Standards traceable?	Yes	No	**N/A**
Standards expired?	Yes	No	**N/A**
Transcription/calculation errors?	Yes	No	**N/A**

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A
Duplicate injection %RSD values acceptable? ..... Yes No N/A
Analytical spikes performed as required? ..... Yes No N/A
Analytical spike recoveries acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
MSA performed as required? ..... Yes No N/A
MSA results acceptable? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227290

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-227290/1-A	Analysis Batch:	280-227791	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	05/28/2014 1304	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.0940	B	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	4.05	B	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Lab Control Sample - Batch: 280-227290

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-227290/2-A	Analysis Batch:	280-227791	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	05/28/2014 1307	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	201.6	101	82 - 116	
Antimony	50.0	52.14	104	82 - 110	
Arsenic	100	101.1	101	85 - 110	
Barium	200	206.3	103	87 - 112	
Beryllium	5.00	5.07	101	84 - 114	
Boron	100	100.1	100	80 - 120	
Cadmium	10.0	11.33	113	87 - 110	N
Calcium	5000	5048	101	82 - 114	
Chromium	20.0	20.90	105	84 - 114	
Cobalt	50.0	50.96	102	87 - 110	
Copper	25.0	26.55	106	88 - 110	
Iron	100	105.6	106	87 - 120	
Lead	50.0	50.17	100	86 - 110	
Magnesium	5000	5068	101	90 - 110	
Manganese	50.0	51.16	102	88 - 110	
Molybdenum	100	103.3	103	86 - 110	
Nickel	50.0	50.78	102	87 - 110	
Potassium	5000	5162	103	89 - 110	
Selenium	200	201.0	100	83 - 110	
Silicon	1000	133.0	13	10 - 70	
Silver	5.00	5.32	106	87 - 114	
Sodium	5000	5084	102	90 - 112	
Vanadium	50.0	52.14	104	88 - 110	
Zinc	50.0	50.60	101	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike - Batch: 280-227290

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-55789-1	Analysis Batch:	280-227791	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	05/28/2014 1317	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7980		185	5873	-1136	50 - 200	4
Antimony	0.40	B	46.3	13.58	28	20 - 200	
Arsenic	3.3		92.7	49.61	50	76 - 111	N
Barium	62.0		185	130.4	37	52 - 159	N
Beryllium	0.032	U	4.63	2.22	48	72 - 105	N
Boron	0.96	B	92.7	47.55	50	80 - 120	N
Cadmium	0.13	B	9.27	5.53	58	40 - 130	
Calcium	7990		4630	7594	-9	43 - 165	N
Chromium	11.6		18.5	17.24	30	70 - 200	N
Cobalt	10.4		46.3	29.20	41	72 - 106	N
Copper	16.1		23.2	21.76	24	37 - 187	N
Iron	24800		92.7	14780	-10853	70 - 200	4
Lead	5.5		46.3	27.06	46	70 - 200	N
Magnesium	6140		4630	6243	2	64 - 145	N
Manganese	379		46.3	246.9	-284	40 - 200	4
Molybdenum	0.25	U	92.7	46.98	51	75 - 103	N
Nickel	14.9		46.3	32.29	37	61 - 126	N
Potassium	1290		4630	3205	41	56 - 172	N
Selenium	0.83	U	185	96.63	52	76 - 104	N
Silicon	274		927	269.6	-0.5	20 - 200	N
Silver	0.16	U	4.63	2.72	59	75 - 141	N
Sodium	280		4630	2652	51	78 - 111	N
Vanadium	61.9		46.3	61.70	-0.3	50 - 169	N
Zinc	47.5		46.3	52.85	12	70 - 200	N

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Duplicate - Batch: 280-227290

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-55789-1	Analysis Batch:	280-227791	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-227290	Lab File ID:	26A052814A.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.03 g
Analysis Date:	05/28/2014 1315	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	05/27/2014 1230				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	7980		4790	50	40	M
Antimony	0.40	B	0.38	NC	40	U
Arsenic	3.3		2.64	23	30	
Barium	62.0		35.70	54	30	M
Beryllium	0.032	U	0.033	NC	30	U
Boron	0.96	B	0.98	NC	30	U
Cadmium	0.13	B	0.0629	68	30	B M N
Calcium	7990		4836	49	30	M
Chromium	11.6		7.33	46	40	M
Cobalt	10.4		6.47	46	30	M
Copper	16.1		10.09	46	30	M
Iron	24800		15090	49	40	M
Lead	5.5		3.55	44	40	M
Magnesium	6140		3799	47	30	M
Manganese	379		228.3	50	40	M
Molybdenum	0.25	U	0.26	NC	30	U
Nickel	14.9		9.63	43	30	M
Potassium	1290		773.4	50	40	M
Selenium	0.83	U	0.86	NC	30	U
Silicon	274		157.5	54	40	M
Silver	0.16	U	0.16	NC	30	U
Sodium	280		167.4	50	30	M
Vanadium	61.9		36.76	51	30	M
Zinc	47.5		29.68	46	40	M

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227408

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-227408/1-A	Analysis Batch:	280-227591	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/27/2014 1815	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-227408

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-227408/2-A	Analysis Batch:	280-227591	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	05/27/2014 1951	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.434	104	87 - 111	

Matrix Spike - Batch: 280-227408

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-55789-1	Analysis Batch:	280-227591	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.62 g
Analysis Date:	05/27/2014 1825	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0087	B	0.415	0.418	99	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Duplicate - Batch: 280-227408

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-55789-1	Analysis Batch:	280-227591	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-227408	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.56 g
Analysis Date:	05/27/2014 1822	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	05/27/2014 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0087	B	0.00909	4	20	B

Date: 20 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Subsite 100-N-84:2
Subject: PCB - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	C	See note 1
J1TPX6	5/21/14	Soil	C	See note 1
J1TPX7	5/21/14	Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	C	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Holding times are not applicable for PCB analysis.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. Three analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other results met the RQL.

Completeness

Data Package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV1**

Lab Sample ID: 280-55789-1
Client Matrix: Solid
% Moisture: 2.8

Date Sampled: 05/21/2014 0749
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 1905			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	95		59 - 130
Tetrachloro-m-xylene	91		53 - 128

6/11/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV2**

Lab Sample ID: 280-55789-2
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/21/2014 0744
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227786	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	31.3 g
Dilution:	5.0			Final Weight/Volume:	5 mL
Analysis Date:	05/29/2014 1313			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		13	U D	13	49
Aroclor 1221		39	U D	39	80
Aroclor 1232		9.7	U D	9.7	49
Aroclor 1242		23	U D	23	49
Aroclor 1248		23	U D	23	49
Aroclor 1254		500	D	13	49
Aroclor 1260		13	U D	13	49

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	121	D	59 - 130
Tetrachloro-m-xylene	93	D	53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX5

Lab Sample ID: 280-55789-4
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 1051
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 1952			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.8	U	7.8	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.5	U	2.5	9.8
Aroclor 1260		2.5	U	2.5	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	91		59 - 130
Tetrachloro-m-xylene	91		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX6**

Lab Sample ID: 280-55789-5
Client Matrix: Solid
% Moisture: 1.1

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2103			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	16
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.6	U	4.6	10
Aroclor 1248		4.6	U	4.6	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	89		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX7**

Lab Sample ID: 280-55789-6
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/21/2014 1115
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2128			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.0	U	8.0	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	94		59 - 130
Tetrachloro-m-xylene	91		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX8**

Lab Sample ID: 280-55789-7
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/21/2014 1120
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2213			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.6	U	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	89		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX9

Lab Sample ID: 280-55789-8
Client Matrix: Solid % Moisture: 3.4

Date Sampled: 05/21/2014 0848
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2237			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		6.3	J	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	78		59 - 130
Tetrachloro-m-xylene	97		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR01**

Lab Sample ID: 280-55789-9
Client Matrix: Solid % Moisture: 1.7

Date Sampled: 05/21/2014 0818
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2301			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.8	U	7.8	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.5	U	4.5	9.8
Aroclor 1248		4.5	U	4.5	9.8
Aroclor 1254		2.5	U	2.5	9.8
Aroclor 1260		2.5	U	2.5	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	89		59 - 130
Tetrachloro-m-xylene	92		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR02

Lab Sample ID: 280-55789-10
Client Matrix: Solid % Moisture: 1.5

Date Sampled: 05/21/2014 0857
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2324			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.7
Aroclor 1221		7.8	U	7.8	16
Aroclor 1232		1.9	U	1.9	9.7
Aroclor 1242		4.5	U	4.5	9.7
Aroclor 1248		4.5	U	4.5	9.7
Aroclor 1254		2.5	U	2.5	9.7
Aroclor 1260		2.5	U	2.5	9.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	90		59 - 130
Tetrachloro-m-xylene	88		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR04

Lab Sample ID: 280-55789-11
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/21/2014 0803
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/28/2014 2348			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	98		59 - 130
Tetrachloro-m-xylene	93		53 - 128

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR07**

Lab Sample ID: 280-55789-12
Client Matrix: Solid % Moisture: 1.3

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-227280	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	05/29/2014 0011			Injection Volume:	1 uL
Prep Date:	05/23/2014 2053			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.9
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.9
Aroclor 1242		4.6	U	4.6	9.9
Aroclor 1248		4.6	U	4.6	9.9
Aroclor 1254		2.6	U	2.6	9.9
Aroclor 1260		2.6	U	2.6	9.9

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	90		53 - 128

6/19/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807
SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 DAY		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: LXH-11-009, WC-H-11-001, RCC-07012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container	G/P	aG	aG	G	Ga*					
				No. of Container(s)	1	1	1	1	3					
				Volume	250mL	250mL	250mL	125mL	60 40mL DWS 5/19/14					
				Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
J1TPV1	SOIL	5-21-14	0749		X	X	X	X	X					
J1TPV2	SOIL	5-21-14	0744		X	X	X	X	X					
~~J1TPV3~~	~~SOIL~~	DWS 5/21/14												
~~J1TPV4~~	~~SOIL~~													
~~J1TPV5~~ DWS 5/22/14	~~SOIL~~	5-21-14	0736		X	X	X	X	X 05-21-14					

Page 1 of 1

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	Joshua DWSHEA	5/21/14 1442
Joshua DWSHEA	5/21/14 1703	Fridge 3A 1269 Battelle	5/21/14 1703
Fridge 3A 1269 Battelle	5/22/14 0816	Joshua DWSHEA	5/22/14 0816
DWSHea DWSHEA	5/22/14 0820	Fed Ex	
			5/23/14 945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

WCH-EE-011

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302 | Page ~~3 of 3~~ 2 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code	Data Turnaround: 7 days
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit	SAF No.: RC-189	
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12; COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131147	Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

		Preservation		Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
		Type of Container		G/P	aG	aG	G	Ga*					
		No. of Container(s)		1	1	1	1	3					
		Volume		250mL	250mL	250mL	125mL	60 ~~mL~~ DWS 5/19/14					
		Sample Analysis		See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
Sample No.	**Matrix**	**Sample Date**	**Sample Time**										
~~J1TPW1~~	~~SOIL~~	DWS 5/21/14											
~~J1TPW2~~	~~SOIL~~												
~~J1TPW3~~	~~SOIL~~												
J1TPW4	SOIL	5-21-14	0713	X	—			~~DWS 5/19/21~~	DWS 5/21/14				
								DWS 5/22/14					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Chincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A WEO Battelle	5/21/14 1703
DWShea Fridge 3A 1060 Battelle	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
		[signature]	5-23-14 945

DWS 5/22/14

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

4.4, 4.1, 4.6

JP0807 RS70.3 5/23/14

RECEIVED BY SMS DATE 5/22/14

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

25

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RLC-07012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis				
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D+	TPH-Gasoline Range - WTPH-G
J1TPX5	SOIL	5-21-14	1051	Cool 4C	aG	1	250mL	X	X	X	X	X
J1TPX6	SOIL	5-21-14	1058	Cool 4C	aG	1	250mL	X	X	X	X	X
J1TPX7	SOIL	5-21-14	1115	Cool 4C	aG	1	250mL	X	X	X	X	X
J1TPX8	SOIL	5-21-14	1120	Cool 4C	aG	1	250mL	X	X	X	X	X
J1TPX9	SOIL	5-21-14	0848	Cool 4C	G	1	125mL	X	X	X	X	X
				Cool 4C	Ga*	3	60mL					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1442 5-21-14	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A	5/21/14 1703
Fridge 3A 1050 By Hille	5/21/14 5/22/14	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code:

Data Turnaround: 7days

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See item (1) in Special Instructions
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	250mL	PCBs - 8082
				Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D +
				Cool 4C	Ga*	3	60mL	TPH-Gasoline Range - WTPH-G
~~J1TR00~~	~~SOIL~~	BWS 5/21/14						
J1TR01	SOIL	5/21/14	0818	x	x	x	x	x
J1TR02	SOIL	5/21/14	0857	x	x	x	x	x
~~J1TR03~~	~~SOIL~~		BWS 5/21/14					
J1TR04	SOIL	5-21-14	0803	x	x	x	x	x

CHAIN OF POSSESSION

05-22-14

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	Mushea BWSHEA	5/21/14 1442
BWSHEA BWSHEA	5/21/14 1703	Fridge 3A 106 Bathelle	5/21/14 1703
Fridge 3A 106 Bathelle	5/22/14 0816	BWSHEA BWSHEA	5/22/14 0816
BWSHEA BWSHEA	5/22/14 0820	Fed EX	
			5-23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

JP0807

REVIEWED BY BMS DATE 5/22/14

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-189-304	Page 3 of 3
Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 7days
Project Designation: 100N Field Remediation	Sampling Location: 100-N-64:2, Verification, South sampling unit		SAF No.: RC-189	
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See QSAC	

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
~~JJTR05~~	~~SOIL~~	5/21/14		Type of Container: G/P	aG	aG	G	Ge*					
~~JJTR06~~	~~SOIL~~			No. of Container(s): 1	1	1	1	3					
JJTR07	SOIL	5-21-14	1058	Volume: 250mL	250mL	250mL	125mL	60mL					
				Sample Analysis: See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
					X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names
Quincy Stowe	5/21/14 1442	Joshua Joshua	5/21/14 1442	
Joshua Joshua	5/21/14 1703	Fridge 3A 1000 Bottle	5/21/14 1703	
Fridge 3A 1000 Bottle	5/22/14 0816	Joshua Joshua	5/22/14 0816	
Joshua Joshua	5/22/14 0820	Fed Ex		
			5-23-14 945	

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP 0807

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-84:2			DATA PACKAGE: JP0807		
VALIDATOR: ELR		LAB: TAL		DATE: 6/15/14	
			SDG: JP0807		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1TPV1 J1TPV2 J1TPX5 J1TPX6					
J1TPX7 J1TPX8 J1TPX9 J1TR01					
J1TR02 J1TR04 J1TR07					
soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no PB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments:

no PBs

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

3 over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227280

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-227280/1-A	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-227280	Lab File ID:	05280020.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	05/28/2014 1818	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/23/2014 2053			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.7	U	2.7	9.8
Aroclor 1221	7.9	U	7.9	16
Aroclor 1232	2.0	U	2.0	9.8
Aroclor 1242	4.6	U	4.6	9.8
Aroclor 1248	4.6	U	4.6	9.8
Aroclor 1254	2.6	U	2.6	9.8
Aroclor 1260	2.6	U	2.6	9.8

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	105	59 - 130
Tetrachloro-m-xylene	95	53 - 128

Lab Control Sample - Batch: 280-227280

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-227280/2-A	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-227280	Lab File ID:	05280021.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.3 g
Analysis Date:	05/28/2014 1842	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	05/23/2014 2053			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	31.0	34.7	112	54 - 132	
Aroclor 1260	31.0	34.7	112	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	106	59 - 130
Tetrachloro-m-xylene	97	53 - 128

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227280

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-55789-4	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-227280	Lab File ID:	05280025.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.9 g
Analysis Date:	05/28/2014 2016			Final Weight/Volume:	5 mL
Prep Date:	05/23/2014 2053			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY
MSD Lab Sample ID:	280-55789-4	Analysis Batch:	280-227569	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-227280	Lab File ID:	05280026.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	05/28/2014 2040			Final Weight/Volume:	5 mL
Prep Date:	05/23/2014 2053			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aroclor 1016	73	95	54 - 132	30	26		*
Aroclor 1260	93	102	62 - 129	12	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	91	97	59 - 130
Tetrachloro-m-xylene	64	92	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227280

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-55789-4	Units: ug/Kg		MSD Lab Sample ID:	280-55789-4
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/28/2014 2016			Analysis Date:	05/28/2014 2040
Prep Date:	05/23/2014 2053			Prep Date:	05/23/2014 2053
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Aroclor 1016	2.7	U	32.3	33.3	23.4	31.7	*
Aroclor 1260	2.5	U	32.3	33.3	29.9	33.8	

Date: 20 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Subsite 100-N-84:2
Subject: Polyaromatic Hydrocarbons - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	C	See note 1
J1TPX6	5/21/14	Soil	C	See note 1
J1TPX7	5/21/14	Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	C	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	C	See note 1

1 – PAH by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as

follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results

are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

POLYAROMATIC HYDROCARBONS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPV1

Lab Sample ID: 280-55789-1
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 0749
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 1915			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV2**

Lab Sample ID: 280-55789-2
Client Matrix: Solid

% Moisture: 1.2

Date Sampled: 05/21/2014 0744
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 1946			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		120	X	9.6	96
Acenaphthylene		8.6	U	8.6	96
Anthracene		110		2.9	19
Benzo[a]anthracene		620		3.1	14
Benzo[a]pyrene		640		6.2	14
Benzo[b]fluoranthene		480	N X	4.0	14
Benzo[g,h,i]perylene		400		6.9	29
Benzo[k]fluoranthene		220		3.8	14
Chrysene		700		4.7	38
Dibenzo(a,h)anthracene		85	X	11	29
Fluoranthene		820		12	38
Fluorene		95		5.1	29
Indeno[1,2,3-cd]pyrene		400		12	29
Naphthalene		12	U	12	96
Phenanthrene		210		12	38
Pyrene		1200		12	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	103		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX5

Lab Sample ID: 280-55789-4
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 1051
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 2117			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		7.7	J	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		14	J	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		18	J	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX6**

Lab Sample ID: 280-55789-5
Client Matrix: Solid % Moisture: 1.1

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 2218			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		5.8	J	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		19		6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		7.5	J	3.8	15
Chrysene		24	J X	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		53	X	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	J X	12	29
Naphthalene		12	U	12	97
Phenanthrene		18	J	12	39
Pyrene		53		12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX7**

Lab Sample ID: 280-55789-6
Client Matrix: Solid

% Moisture: 1.6

Date Sampled: 05/21/2014 1115
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	32.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 2249			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.5	U	9.5	95
Acenaphthylene		8.6	U	8.6	95
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		13	J	3.0	14
Benzo[a]pyrene		13	J	6.1	14
Benzo[b]fluoranthene		4.0	U	4.0	14
Benzo[g,h,i]perylene		17	J	6.9	29
Benzo[k]fluoranthene		6.4	J X	3.8	14
Chrysene		15	J X	4.6	38
Dibenzo(a,h)anthracene		10	U	10	29
Fluoranthene		26	J	12	38
Fluorene		5.0	U	5.0	29
Indeno[1,2,3-cd]pyrene		12	J	11	29
Naphthalene		11	U	11	95
Phenanthrene		14	J	11	38
Pyrene		26	J	11	38

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX8**

Lab Sample ID: 280-55789-7
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/21/2014 1120
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 2319			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.8	U	8.8	98
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		7.4	J	6.3	15
Benzo[b]fluoranthene		5.8	J X	4.1	15
Benzo[g,h,i]perylene		7.1	U	7.1	29
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		9.6	J X	4.8	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		19	J	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		19	J	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	84		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX9**

Lab Sample ID: 280-55789-8
Client Matrix: Solid % Moisture: 3.4

Date Sampled: 05/21/2014 0848
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	30.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/29/2014 2350			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		9.9	J	6.6	16
Benzo[b]fluoranthene		4.3	U	4.3	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		7.0	J	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	81		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR01

Lab Sample ID: 280-55789-9
Client Matrix: Solid % Moisture: 1.7

Date Sampled: 05/21/2014 0818
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/30/2014 0020			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR02**

Lab Sample ID: 280-55789-10
Client Matrix: Solid % Moisture: 1.5

Date Sampled: 05/21/2014 0857
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/30/2014 0051			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	82		72 - 115

6/14/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR04**

Lab Sample ID: 280-55789-11
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/21/2014 0803
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/30/2014 0122			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	81		72 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR07**

Lab Sample ID: 280-55789-12
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-227266	Initial Weight/Volume:	31.2 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	05/30/2014 0152			Injection Volume:	20 uL
Prep Date:	05/23/2014 1815			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

6/19/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807
SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code:

Data Turnaround: 7 DAY

Other Labs Shipped To:

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	3
Volume	250mL	250mL	250mL	125mL	~~40mL~~ 60 DWS 5/19/14
Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	(1)	PAHs	PCBs	TPH-D	TPH-G
J1TPV1	SOIL	5-21-14	0749	X	X	X	X	X
J1TPV2	SOIL	5-21-14	0744	X	X	X	X	X
~~J1TPV3~~	~~SOIL~~	DWS 5/21/14						
~~J1TPV4~~	~~SOIL~~							
~~J1TPV5~~ DWS 5/22/14	~~SOIL~~	~~5-21-14~~	~~0736~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~ 05-21-14

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A 1060 Battelle	5/21/14 1703
Fridge 3A 1060 Battelle	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
		[signature]	5-23-14 945

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

24

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

Page ~~2 of 2~~ 2 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131 147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis				
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G
~~J1TPW1~~	~~SOIL~~	DWS 5/21/14			aG	1	250mL					
~~J1TPW2~~	~~SOIL~~				aG	1	250mL					
~~J1TPW3~~	~~SOIL~~				G	1	125mL					
J1TPW4	SOIL	5-21-14	0713		Ga*	3	60 add'l DWS 5/22/14	X			~~DWS 5/21/14~~ DWS 5/21/14 DWS 5/22/14	

DWS 5/22/14

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3rd Bathdr.	5/21/14 1703
~~DWShea DWSHEA~~ Fridge BA 10801 Bathdr 16	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5/23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

4,4,1,4,2

VB70.3

5/23/14

JP0807

RECEIVED BY SMS DATE 5/22/14

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RLC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code | Data Turnaround: 7 days

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See Item (1) in Special Instructions	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082	Sample Analysis: TPH-Diesel Range - WTPH-D+	Sample Analysis: TPH-Gasoline Range - WTPH-G
				Cool 4C	G/P	1	250mL					
				Cool 4C	aG	1	250mL					
				Cool 4C	aG	1	250mL					
				Cool 4C	G	1	125mL					
				Cool 4C	Ga*	3	60mL					
J1TPX5	SOIL	5-21-14	1051	X	X	X	X	X				
J1TPX6	SOIL	5-21-14	1058	X	X	X	X	X				
J1TPX7	SOIL	5-21-14	1115	X	X	X	X	X				
J1TPX8	SOIL	5-21-14	1120	X	X	X	X	X				
J1TPX9	SOIL	5-21-14	0848	X	X	X	X	X				

Page 1 of 1

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A	5/21/14 1703
Fridge 3A	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-189-304	Page 2 of 3
Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 7days
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189	
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex	
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To											
	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
	Type of Container	G/P	aG	aG	G	Ge*					
POSSIBLE SAMPLE HAZARDS/REMARKS: *Potentially radioactive*	No. of Container(s)	1	1	1	1	3					
	Volume	250mL	250mL	250mL	125mL	60mL					
Special Handling and/or Storage	Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					

Sample No.	Matrix	Sample Date	Sample Time									
~~J1TR00~~	~~SOIL~~	DWS 5/21/14										
J1TR01	SOIL	5/21/14	0818	x	x	x	x	x				
J1TR02	SOIL	5/21/14	0857	x	x	x	x	x				
~~J1TR03~~	~~SOIL~~		DWS 5/21/14									
J1TR04	SOIL	5-21-14	0803	x	x	x	x	x				

CHAIN OF POSSESSION (as of 5/22/14)

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWSHEA DWSHEA	5/21/14 1442
DWSHEA DWSHEA	5/21/14 1703	Fridge 3A 106A Battelle	5/21/14 1703
Fridge 3A 106A Battelle	5/22/14 0816	DWSHEA DWSHEA	5/22/14 0816
DWSHEA DWSHEA	5/22/14 0820	Fed EX	
			5-23-14 945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-304	Page 3 of 9

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCL-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis									
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	Cool 4C	eG	1	250mL	PAHs - 8310	Cool 4C	eG	1	250mL	PCBs - 8082	Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D +	Cool 4C	Ge*	3	60mL	TPH-Gasoline Range - WTPH-G
~~JHTR05~~	~~SOIL~~	5/21/14															
~~JHTR06~~	SOIL																
JHTR07	SOIL	5-21-14	1058	X					X					X					X					X				

Page 1 of 1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5/21/14 1442	JHUSHEA JHUSHEA	5/21/14 1442
JHUSHEA JHUSHEA	5/21/14 1703	Fridge 3A 1000 Battelle	5/21/14 1703
Fridge 3A 1000 Battelle	5/22/14 0816	JHUSHEA JHUSHEA	5/22/14 0816
JHUSHEA JHUSHEA	5/22/14 0820	Fed EX	
			5-23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP 0807

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-84.2			DATA PACKAGE: JP0807		
VALIDATOR: BLR		LAB: TAL		DATE: 6/15/14	
			SDG: JP0807		

ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:

JITPV1 JITPV2 JITPX5 JITPAC
JITPX7 JITPX8 JITPX9 JITR01
JITR02 JITR04 JITR07

Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: No PBs

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: No PA

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A
Duplicate results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... (Yes) No N/A
Field split RPD values acceptable? ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... (Yes) No N/A
Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227266

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-227266/1-A	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-227266	Lab File ID:	G0529008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.0 g
Analysis Date:	05/29/2014 1814	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/23/2014 1815			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	10	U	10	100
Acenaphthylene	9.0	U	9.0	100
Anthracene	3.1	U	3.1	20
Benzo[a]anthracene	3.2	U	3.2	15
Benzo[a]pyrene	6.4	U	6.4	15
Benzo[b]fluoranthene	4.2	U	4.2	15
Benzo[g,h,i]perylene	7.2	U	7.2	30
Benzo[k]fluoranthene	3.9	U	3.9	15
Chrysene	4.8	U	4.8	40
Dibenzo(a,h)anthracene	11	U	11	30
Fluoranthene	13	U	13	40
Fluorene	5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene	12	U	12	30
Naphthalene	12	U	12	100
Phenanthrene	12	U	12	40
Pyrene	12	U	12	40

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	83	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Lab Control Sample - Batch: 280-227266

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-227266/2-A	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-227266	Lab File ID:	G0529009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.3 g
Analysis Date:	05/29/2014 1844	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	05/23/2014 1815			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1980	1770	89	78 - 116	
Acenaphthylene	1980	1690	85	76 - 115	
Anthracene	1980	1650	83	74 - 115	
Benzo[a]anthracene	1980	1920	97	85 - 120	
Benzo[a]pyrene	1980	1720	87	74 - 121	
Benzo[b]fluoranthene	1980	1810	91	85 - 115	
Benzo[g,h,i]perylene	1980	1940	98	85 - 120	
Benzo[k]fluoranthene	1980	1880	95	85 - 115	
Chrysene	1980	1880	95	83 - 115	
Dibenzo(a,h)anthracene	1980	1810	91	83 - 115	
Fluoranthene	1980	1830	93	83 - 115	
Fluorene	1980	1810	92	80 - 115	
Indeno[1,2,3-cd]pyrene	1980	1880	95	85 - 123	
Naphthalene	1980	1810	91	80 - 121	
Phenanthrene	1980	1800	91	80 - 115	
Pyrene	1980	1830	93	75 - 116	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	83	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227266

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-55789-2	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-227266	Lab File ID:	G0529012.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	05/29/2014 2016			Final Weight/Volume:	4 mL
Prep Date:	05/23/2014 1815			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-55789-2	Analysis Batch:	280-227852	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-227266	Lab File ID:	G0529013.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	05/29/2014 2047			Final Weight/Volume:	4 mL
Prep Date:	05/23/2014 1815			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	86	87	78 - 116	2	20		
Acenaphthylene	81	84	76 - 115	4	21		
Anthracene	90	89	74 - 115	1	20		
Benzo[a]anthracene	97	95	85 - 120	1	20		
Benzo[a]pyrene	95	91	74 - 121	2	20		
Benzo[b]fluoranthene	87	84	85 - 115	3	20		N
Benzo[g,h,i]perylene	103	102	85 - 120	0	20		
Benzo[k]fluoranthene	97	97	85 - 115	1	20		
Chrysene	97	95	83 - 115	1	20		
Dibenzo(a,h)anthracene	88	89	83 - 115	1	20		
Fluoranthene	91	94	83 - 115	3	20		
Fluorene	87	89	80 - 115	3	20		
Indeno[1,2,3-cd]pyrene	100	98	85 - 123	1	20		
Naphthalene	106	103	80 - 121	16	20		
Phenanthrene	93	91	80 - 115	1	20		
Pyrene	98	87	75 - 116	7	20		

Surrogate	MS % Rec	MSD % Rec		Acceptance Limits
Terphenyl-d14 (SUR)	90	119	*	72 - 115

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227266

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-55789-2	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	05/29/2014 2016		
Prep Date:	05/23/2014 1815		
Leach Date:	N/A		

MSD Lab Sample ID:	280-55789-2
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	05/29/2014 2047
Prep Date:	05/23/2014 1815
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Acenaphthene	120		1980	2000	1820	1850	
Acenaphthylene	8.6	U	1980	2000	1610	1680	
Anthracene	110		1980	2000	1900	1890	
Benzo[a]anthracene	620		1980	2000	2540	2520	
Benzo[a]pyrene	640		1980	2000	2520	2470	
Benzo[b]fluoranthene	480		1980	2000	2210	2150	N
Benzo[g,h,i]perylene	400		1980	2000	2440	2450	
Benzo[k]fluoranthene	220		1980	2000	2140	2160	
Chrysene	700		1980	2000	2610	2590	
Dibenzo(a,h)anthracene	85		1980	2000	1840	1860	
Fluoranthene	820		1980	2000	2620	2700	
Fluorene	95		1980	2000	1820	1870	
Indeno[1,2,3-cd]pyrene	400		1980	2000	2390	2360	
Naphthalene	12	U	1980	2000	2110	2060	
Phenanthrene	210		1980	2000	2060	2030	
Pyrene	1200		1980	2000	3110	2900	

Date: 20 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Subsite 100-N-84:2
Subject: Gasoline Range Organic - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	C	See note 1
J1TPX6	5/21/14	Soil	C	See note 1
J1TPX7	5/21/14	Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	C	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	C	See note 1

1 – NWTPH-Gx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field (equipment) Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate recoveries were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

GASOLINE RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPV1

Lab Sample ID: 280-55789-1
Client Matrix: Solid
% Moisture: 2.8

Date Sampled: 05/21/2014 0749
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.21 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0150			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	88		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV2**

Lab Sample ID: 280-55789-2
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/21/2014 0744
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.22 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0304			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		320	U	320	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	90		77 - 123

6/12/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX5**

Lab Sample ID: 280-55789-4
Client Matrix: Solid

% Moisture: 2.8

Date Sampled: 05/21/2014 1051
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227833	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.11 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/29/2014 1243			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	97		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX6**

Lab Sample ID: 280-55789-5
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.28 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0418			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		320	U	320	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	92		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX7

Lab Sample ID: 280-55789-6
Client Matrix: Solid % Moisture: 1.6

Date Sampled: 05/21/2014 1115
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.05 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0443			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	93		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX8**

Lab Sample ID: 280-55789-7
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/21/2014 1120
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.02 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0508			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	91		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX9**

Lab Sample ID: 280-55789-8
Client Matrix: Solid

% Moisture: 3.4

Date Sampled: 05/21/2014 0848
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.35 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0533			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		320	U	320	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	89		77 - 123

6/12/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR01**

Lab Sample ID: 280-55789-9
Client Matrix: Solid
% Moisture: 1.7

Date Sampled: 05/21/2014 0818
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.24 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0557			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		320	U	320	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	92		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR02

Lab Sample ID: 280-55789-10
Client Matrix: Solid

% Moisture: 1.5

Date Sampled: 05/21/2014 0857
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.06 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0622			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	93		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR04**

Lab Sample ID: 280-55789-11
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/21/2014 0803
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.02 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0647			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		330	U	330	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	92		77 - 123

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR07

Lab Sample ID: 280-55789-12
Client Matrix: Solid

% Moisture: 1.3

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Gx	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Prep Method:	5030B	Prep Batch:	280-227475	Initial Weight/Volume:	10.38 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	05/28/2014 0712			Injection Volume:	5 mL
Prep Date:	05/27/2014 1526			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Gasoline		320	U	320	1200

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	90		77 - 123

6/12/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807
SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302 | Page 1 of 2 | DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 DAY		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See item (1) in Special Instructions	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082	Sample Analysis: TPH-Diesel Range - WTPH-D+	Sample Analysis: TPH-Gasoline Range - WTPH-G
				Cool 4C	G/P	1	250mL					
J1TPV1	SOIL	5-21-14	0749	Cool 4C	aG	1	250mL	X	X	X	X	X
J1TPV2	SOIL	5-21-14	0744	Cool 4C	aG	1	250mL	X	X	X	X	X
~~J1TPV3~~	~~SOIL~~	DWS 5/21/14		Cool 4C	G	1	125mL					
~~J1TPV4~~	~~SOIL~~			Cool 4C	G*	3	60mL DWS 5/19/14					
~~J1TPV5~~ DWS 5/22/14	~~SOIL~~	~~5-21-14~~	~~0726~~									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DwShea DWSHEA	5/21/14 1442
DwShea DWSHEA	5/21/14 1703	Fridge 3A Battelle	5/21/14 1703
Fridge 3A 1060 Battelle	5/22/14 0816	DwShea DWSHEA	5/22/14 0816
DwShea DWSHEA	5/22/14 0820	Fed Ex	
			5/23/14 945

FINAL SAMPLE DISPOSITION — Disposal Method: | Disposed By: | Date/Time:

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302 | Page ~~2 of 2~~ 2 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131 147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis: See item (1) in Special Instructions	Sample Analysis: PAHs - 8310	Sample Analysis: PCBs - 8082	Sample Analysis: TPH-Diesel Range - WTPH-D +	Sample Analysis: TPH-Gasoline Range - WTPH-G
				Cool 4C	G/P	1	250mL					
				Cool 4C	aG	1	250mL					
				Cool 4C	aG	1	250mL					
				Cool 4C	G	1	125mL					
				Cool 4C	Ga*	3	60 ~~40~~ mL DWS 5/21/14					
~~J1TPW1~~	~~SOIL~~	DWS 5/21/14										
~~J1TPW2~~	~~SOIL~~											
~~J1TPW3~~	~~SOIL~~											
J1TPW4	SOIL	5-21-14	0713					X				

DWS 5/22/14

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	Mosher DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3rd Bldg 6	5/21/14 1703
~~DWShea DWSHEA~~ Fridge 3rd Bldg 6	~~5/22/14~~ 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

DWS 5/22/14

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

4,4,1,4,a

RS70.3

5/23/14

50

JP0807

RECEIVED BY SMS DATE 5/22/14

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-304	Page 1 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code	Data Turnaround
Q. Stowe	Joan Kessner 375-4688	KESSNER, JH		7days
Project Designation	**Sampling Location**	**SAF No.**		
100N Field Remediation	100-N-84:2, Verification, South sampling unit	RC-189		
Ice Chest No.	**Field Logbook No.** / **COA**	**Method of Shipment**		
WCH-11-009, WCH-11-001, RCC-07-012	EL-1652-12 / 01N8422000	Commercial Carrier / Fed Ex		
Shipped To	**Offsite Property No.**	**Bill of Lading/Air Bill No.**		
TestAmerica Denver	A131147	See OSPC		

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	G	Ge*					
No. of Container(s)	1	1	1	1	3					
Volume	250mL	250mL	250mL	125mL	60mL					
Sample Analysis	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					

Sample No.	Matrix	Sample Date	Sample Time									
J1TPX6	SOIL	5-21-14	1051	X	X	X	X	X				
J1TPX6	SOIL	5-21-14	1058	X	X	X	X	X				
J1TPX7	SOIL	5-21-14	1115	X	X	X	X	X				
J1TPX8	SOIL	5-21-14	1120	X	X	X	X	X				
J1TPX9	SOIL	5-21-14	0845	X	X	X	X	X				

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A	5/21/14 1703
Fridge 3A	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

JP0807

WCH-EE-011

27

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 2 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Price Code

Data Turnaround: 7 days

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	3
Volume	250mL	250mL	250mL	125mL	60mL
Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G

Sample No.	Matrix	Sample Date	Sample Time	(1)	PAHs	PCBs	TPH-D	TPH-G
~~J1TR00~~	~~SOIL~~	DWS 5/21/14						
J1TR01	SOIL	5/21/14	0818	X	X	X	X	X
J1TR02	SOIL	5/21/14	0857	X	X	X	X	X
~~J1TR03~~	~~SOIL~~		DWS 5/21/14					
J1TR04	SOIL	5-21-14	0803	X	X	X	X	X

Page 1 of 1 (vertical margin text, partly obscured)

CHAIN OF POSSESSION Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5/21/14 1442	Dwshea DWSHEA	5/21/14 1442
Dwshea DWSHEA	5/21/14 1703	Fridge 3A 1060 Battelle	5/21/14 1703
Fridge 3A 1060 Battelle	5/22/14 0816	Dwshea DWSHEA	5/22/14 0816
Dwshea DWSHEA	5/22/14 0820	Fed EX	
		[signature]	5-23-14 945

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See QSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container	G/P	aG	aG	G	Ga*					
				No. of Container(s)	1	1	1	1	3					
				Volume	250mL	250mL	250mL	125mL	60mL					
				Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
~~TR05~~	~~SOIL~~	5/21/14												
~~TR06~~	~~SOIL~~	5												
TR07	SOIL	5-21-14	1058	X	X	X	X	X						

Page 1 of 1

28

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5/21/14 1442	Dwshea DuSHEA	5/21/14 1442
Dwshea DuSHEA	5/21/14 1703	Fridge 3A 1660 Bathelle	5/21/14 1703
Fridge 3A 1660 Bathelle	5/22/14 0816	Dwshea DuSHEA	5/22/14 0816
Dwshea DuSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP 0807

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-84.2			DATA PACKAGE: JP0807		
VALIDATOR: ELR		LAB: TAC		DATE: 6/15/14	
			SDG: JP0807		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1TPV1 J1TPV2 J1TPX5 J1TPX6					
J1TPX7 J1TPX8 J1TPX9 J1TR01					
J1TR02 J1TR04 J1TR07					
Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: no PAS

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227475

Method: NWTPH-Gx
Preparation: 5030B

Lab Sample ID:	MB 280-227475/1-A	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Client Matrix:	Solid	Prep Batch:	280-227475	Lab File ID:	012F2901.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 g
Analysis Date:	05/28/2014 0036	Units:	ug/Kg	Final Weight/Volume:	10 mL
Prep Date:	05/27/2014 1526			Injection Volume:	5 mL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Gasoline	330	U	330	1200

Surrogate	% Rec	Acceptance Limits
a,a,a-Trifluorotoluene	84	77 - 123

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-227475

Method: NWTPH-Gx
Preparation: 5030B

LCS Lab Sample ID:	LCS 280-227475/2-A	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Client Matrix:	Solid	Prep Batch:	280-227475	Lab File ID:	013F3001.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 g
Analysis Date:	05/28/2014 0101	Units:	ug/Kg	Final Weight/Volume:	10 mL
Prep Date:	05/27/2014 1526			Injection Volume:	5 mL
Leach Date:	N/A			Column ID:	PRIMARY
LCSD Lab Sample ID:	LCSD 280-227475/3-A	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Client Matrix:	Solid	Prep Batch:	280-227475	Lab File ID:	014F3101.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 g
Analysis Date:	05/28/2014 0125	Units:	ug/Kg	Final Weight/Volume:	10 mL
Prep Date:	05/27/2014 1526			Injection Volume:	5 mL
Leach Date:	N/A			Column ID:	PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline	102	103	85 - 153	0	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
a,a,a-Trifluorotoluene	86	87	77 - 123

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-227475

Method: NWTPH-Gx
Preparation: 5030B

LCS Lab Sample ID:	LCS 280-227475/2-A	Units: ug/Kg		LCSD Lab Sample ID:	LCSD 280-227475/3-A
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/28/2014 0101			Analysis Date:	05/28/2014 0125
Prep Date:	05/27/2014 1526			Prep Date:	05/27/2014 1526
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Gasoline	5500	5500	5630	5650

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227475

Method: NWTPH-Gx
Preparation: 5030B

MS Lab Sample ID:	280-55789-1	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Client Matrix:	Solid	Prep Batch:	280-227475	Lab File ID:	016F3301.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10.24 g
Analysis Date:	05/28/2014 0215			Final Weight/Volume:	10 mL
Prep Date:	05/27/2014 1526			Injection Volume:	5 mL
Leach Date:	N/A			Column ID:	PRIMARY
MSD Lab Sample ID:	280-55789-1	Analysis Batch:	280-227505	Instrument ID:	VGC_Q
Client Matrix:	Solid	Prep Batch:	280-227475	Lab File ID:	017F3401.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10.04 g
Analysis Date:	05/28/2014 0239			Final Weight/Volume:	10 mL
Prep Date:	05/27/2014 1526			Injection Volume:	5 mL
Leach Date:	N/A			Column ID:	PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Gasoline	108	102	85 - 153	3	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
a,a,a-Trifluorotoluene	92	93	77 - 123

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227475

Method: NWTPH-Gx
Preparation: 5030B

MS Lab Sample ID:	280-55789-1	Units:	ug/Kg	MSD Lab Sample ID:	280-55789-1
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/28/2014 0215			Analysis Date:	05/28/2014 0239
Prep Date:	05/27/2014 1526			Prep Date:	05/27/2014 1526
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Gasoline	330	U	5520	5630	5940	5770

Date: 20 June 2014
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100N Field Remediation – Soil Full Protocol - Waste Subsite 100-N-84:2
Subject: Diesel Range Organics - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	C	See note 1
J1TPX6	5/21/14	Soil	C	See note 1
J1TPX7	5/21/14	Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	C	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	C	See note 1

1 – Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as

follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results

are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N *Area Sampling and Analysis Plan for CERCLA Waste Sites*, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV1**

Lab Sample ID: 280-55789-1
Client Matrix: Solid
% Moisture: 2.8

Date Sampled: 05/21/2014 0749
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280008.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	05/28/2014 1619			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3700	J	990	4000
C10-C28		2600	J	670	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	77		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPV2**

Lab Sample ID: 280-55789-2
Client Matrix: Solid
% Moisture: 1.2

Date Sampled: 05/21/2014 0744
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280011.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/28/2014 1746			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		58000		1000	4000
C10-C28		34000		690	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	82		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX5**

Lab Sample ID: 280-55789-4
Client Matrix: Solid
% Moisture: 2.8

Date Sampled: 05/21/2014 1051
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280012.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	05/28/2014 1815			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		31000		1000	4100
C10-C28		26000		700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	73		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX6

Lab Sample ID: 280-55789-5
Client Matrix: Solid

% Moisture: 1.1

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280013.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	05/28/2014 1844			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		7600		1000	4000
C10-C28		6000		680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	79		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TPX7

Lab Sample ID: 280-55789-6
Client Matrix: Solid % Moisture: 1.6

Date Sampled: 05/21/2014 1115
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280014.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	05/28/2014 1913			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		11000		1000	4000
C10-C28		7300		680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	83		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX8**

Lab Sample ID: 280-55789-7
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/21/2014 1120
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280016.D
Dilution:	1.0			Initial Weight/Volume:	32.6 g
Analysis Date:	05/28/2014 2011			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4200		930	3700
C10-C28		3100	J	630	3700

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TPX9**

Lab Sample ID: 280-55789-8
Client Matrix: Solid
% Moisture: 3.4

Date Sampled: 05/21/2014 0848
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280017.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	05/28/2014 2040			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		19000		1000	4100
C10-C28		6500		690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	75		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: J1TR01

Lab Sample ID: 280-55789-9
Client Matrix: Solid

% Moisture: 1.7

Date Sampled: 05/21/2014 0818
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280018.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	05/28/2014 2108			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3400	J	990	4000
C10-C28		2600	J	670	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	78		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR02**

Lab Sample ID: 280-55789-10
Client Matrix: Solid
% Moisture: 1.5

Date Sampled: 05/21/2014 0857
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280019.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	05/28/2014 2137			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		5900		980	3900
C10-C28		4400		660	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	79		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR04**

Lab Sample ID: 280-55789-11
Client Matrix: Solid
% Moisture: 1.6

Date Sampled: 05/21/2014 0803
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280020.D
Dilution:	1.0			Initial Weight/Volume:	32.2 g
Analysis Date:	05/28/2014 2205			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		3900		940	3800
C10-C28		2600	J	640	3800

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	77		49 - 115

6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Client Sample ID: **J1TR07**

Lab Sample ID: 280-55789-12
Client Matrix: Solid % Moisture: 1.3

Date Sampled: 05/21/2014 1058
Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-227256	Lab File ID:	05280021.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	05/28/2014 2233			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		4400		1000	4100
C10-C28		3100	J	690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	78		49 - 115

6/19/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807
SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302

Page 1 of 2

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 DAY		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit		SAF No.: RC-189
Ice Chest No.: GXH-11-009, GXH-11-001, RCC-07012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / FED EX
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 2

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container	G/P	aG	aG	G	Ge*					
				No. of Container(s)	1	1	1	1	3					
				Volume	250mL	250mL	250mL	125mL	60 40mL DWS 5/19/14					
				Sample Analysis	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
J4TPV1	SOIL	5-21-14	0749		X	X	X	X	X					
J4TPV2	SOIL	5-21-14	0744		X	X	X	X	X					
~~J4TPV3~~	~~SOIL~~	DWS 5/21/14												
~~J4TPV4~~	~~SOIL~~													
~~J4TPV5~~ DWS 5/22/14	~~SOIL~~	5-21-14	0726		X	X	X	X	X 05-21-14					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A 106 Battelle	5/21/14 1703
Fridge 3A 106 Battelle	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5/23/14 945

Sign/Print Names

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

25

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-302 | Page ~~1 of 1~~ 2 of 2 DWS 5/21/14

Collector: Q. Stowe	Company Contact: Joan Kessner — Telephone No. 375-4688	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 7 days
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, North sampling unit	SAF No.: RC-189	
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12 — COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed EX	
Shipped To: TestAmerica Denver	Offsite Property No.: A131147	Bill of Lading/Air Bill No.: See OSPC	

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG	G	Gs*
No. of Container(s)	1	1	1	1	3
Volume	250mL	250mL	250mL	125mL	~~40mL~~ 60 DWS 5/19/14
Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G

Page 118 of 117

Sample No.	Matrix	Sample Date	Sample Time	(1)	PAHs	PCBs	TPH-D	TPH-G
~~J1TPW1~~	~~SOIL~~	DWS 5/21/14						
~~J1TPW2~~	~~SOIL~~							
~~J1TPW3~~	~~SOIL~~							
J1TPW4	SOIL	5-21-14	0713	X	—	—	—	—

~~DWS 5/19/14~~ DWS 5/21/14; DWS 5/22/14

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A Battelle WCG	5/21/14 1703
DWShea DWSHEA Fridge 3A 1080 Battelle	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed EX	
		[signature]	5-23-14 945

DWS 5/22/14

FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

4.4, 4.1, 4.6

JP0807   R570.3   5/23/14   SO

RECEIVED BY SMS DATE 5/22/14

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304 | Page 1 of 3

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 1 of 1

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis				
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G
				Cool 4C	aG	1	250mL					
				Cool 4C	aG	1	250mL					
				Cool 4C	G	1	125mL					
				Cool 4C	Ga*	3	60mL					
J1TPX5	SOIL	5-21-14	1051	X	X	X	X	X				
J1TPX6	SOIL	5-21-14	1058	X	X	X	X	X				
J1TPX7	SOIL	5-21-14	1115	X	X	X	X	X				
J1TPX8	SOIL	5-21-14	1120	X	X	X	X	X				
J1TPX9	SOIL	5-21-14	0848	X	X	X	X	X				

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	DWShea DWSHEA	5/21/14 1442
DWShea DWSHEA	5/21/14 1703	Fridge 3A	5/21/14 1703
Fridge 3A	5/22/14 0816	DWShea DWSHEA	5/22/14 0816
DWShea DWSHEA	5/22/14 0820	Fed Ex	
			5-23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

WCH-EE-011

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-304	Page 2 of 3

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
Q. Stowe	Joan Kessner	375-4688	KESSNER, JH		7days

Project Designation	Sampling Location	SAF No.
100N Field Remediation	100-N-84:2, Verification, South sampling unit	RC-189

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
WCH-11-009, WCH-11-001, RCC-07-012	EL-1652-12	01N8422000	Commercial Carrier / Fed Ex

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
TestAmerica Denver	A131147	See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Page 11 of 11

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis								
				Cool 4C	G/P	1	250mL	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G				
~~J1TR00~~	~~SOIL~~	BWS 5/21/14														
J1TR01	SOIL	5/21/14	0818	Cool 4C	aG	1	250mL	x	x	x	x	x				
J1TR02	SOIL	5/21/14	0857	Cool 4C	aG	1	250mL	x	x	x	x	x				
~~J1TR03~~	~~SOIL~~	BWS 5/21/14		Cool 4C	aG	1	125mL									
J1TR04	SOIL	5-21-14	0803	Cool 4C	G*	3	60mL	x	x	x	x	x				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5-21-14 1442	MJShea BWSHEA	5/21/14 1442
BWSHea BWSHEA	5/21/14 1703	Fridge 3A 100-G Bothell	5/21/14 1703
Fridge 3A 100-G Bothell	5/22/14 0816	BWSHea BWSHEA	5/22/14 0816
BWSHea BWSHEA	5/22/14 0820	Fed EX	
			5-23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

JP0807

REVIEWED BY BMS DATE 5/22/14

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-304

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7 days		
Project Designation: 100N Field Remediation	Sampling Location: 100-N-84:2, Verification, South sampling unit		SAF No.: RC-189
Ice Chest No.: WCH-11-009, WCH-11-001, RCC-07-012	Field Logbook No.: EL-1652-12	COA: 01N8422000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131147		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container	G/P	aG	aG	G	Ga*					
				No. of Container(s)	1	1	1	1	3					
				Volume	250mL	250mL	250mL	125mL	60mL					
				Sample Analysis	See Item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					
~~JJTR05~~	~~SOIL~~	5/21/14												
~~JKTR06~~	~~SOIL~~													
JLTR07	SOIL	5-21-14	1058	X	X	X	X	X						

Page 11 of 28

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	5/21/14 1442	Dwshea DWSHEA	5/21/14 1442
Dwshea DWSHEA	5/21/14 1703	Fridge 3A 1660 Bottle	5/21/14 1703
Fridge 3A 1660 Bottle	5/22/14 0816	Dwshea DWSHEA	5/22/14 0816
Dwshea DWSHEA	5/22/14 0820	Fed EX	
			5-23-14 945

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

REVIEWED BY SMS DATE 5/22/14

JP0807

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-N-84:2			DATA PACKAGE: JP0807		
VALIDATOR: ELR		LAB: TAL		DATE: 6/15/14	
			SDG: JP0807		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1TPV1 J1TPV2 J1TPX5 J1TPX6					
J1TPX7 J1TPX8 J1TPX9 J1TR01					
J1TR02 J1TR04 J1TR07					
Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: NO PTS

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments:

NO PTS

GENERAL ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A
Duplicate results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... (Yes) No N/A
Field split RPD values acceptable? ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... (Yes) No N/A
Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries aceptable? ..... Yes No N/A
Check materials traceable? ..... Yes No N/A
Check materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments: _____

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Method Blank - Batch: 280-227256

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-227256/1-A	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-227256	Lab File ID:	05280005.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	05/28/2014 1452	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	980	U	980	3900
C10-C28	660	U	660	3900

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	80	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-227256/2-A	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-227256	Lab File ID:	05280006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.1 g
Analysis Date:	05/28/2014 1521	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-227256/3-A	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-227256	Lab File ID:	05280007.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.2 g
Analysis Date:	05/28/2014 1550	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	92	90	57 - 115	6	23		
C10-C28	92	90	53 - 115	6	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	75	67	49 - 115

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-227256

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-227256/2-A	Units: ug/Kg		LCSD Lab Sample ID:	LCSD 280-227256/3-A
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/28/2014 1521			Analysis Date:	05/28/2014 1550
Prep Date:	05/23/2014 1935			Prep Date:	05/23/2014 1935
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	66500	64200	61500	57800
C10-C28	66500	64200	61200	57700

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-55789-1	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-227256	Lab File ID:	05280009.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.6 g
Analysis Date:	05/28/2014 1648			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-55789-1	Analysis Batch:	280-227627	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-227256	Lab File ID:	05280010.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	05/28/2014 1717			Final Weight/Volume:	1 mL
Prep Date:	05/23/2014 1935			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	86	88	57 - 115	3	23		
C10-C28	86	89	56 - 115	4	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	64	69	49 - 115

Client: Washington Closure Hanford

Job Number: 280-55789-1
Sdg Number: JP0807

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-55789-1	Units:	ug/Kg	MSD Lab Sample ID:	280-55789-1
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	05/28/2014 1648			Analysis Date:	05/28/2014 1717
Prep Date:	05/23/2014 1935			Prep Date:	05/23/2014 1935
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	3700	J	67300	67700	61400	63200
C10-C28	2600	J	67300	67700	60400	62600